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ABSTRACT

A project explored the Internet's potential to teach instrumental music online to students in regional or remote regions of Western Australia. The project was established on the expectation that, at some time in the not-too-distant future, instrumental music tutors located in metropolitan regions may have, in their normal studio practice, a complement of local, face-to-face students alongside a number of regional students learning their instruments online. For this to occur, tutor and student must be able to access a learning framework which is effective, simple to use, and accessible. Through an action learning program which involved a series of online delivery trials to a small group of students located in various parts of Western Australia, the project attempted to achieve a better understanding of how the learning environment for skills normally physically mediated can be deconstructed into constituent parts and adapted for Internet delivery. A Web site was established which provided students with a series of 14 graded lessons in instrumental performance supported by lesson notes in technique and music theory and a body of associated learning resources. Each musical exercise was accompanied by video and audio demonstrations. Hyperlinks to various related resource materials were provided to encourage non-linear access to knowledge, to enhance repetition, and to encourage re-learning to occur. While the study was successful in building an adequate learning environment using skills and technology within reach of the average music tutor, overall the study was not able to conclude, using the selected learning model, that the Internet is an effective medium for delivering musical instruction to students isolated by distance. Additional information is appended. (Contains 2 tables, 3 figures, and 21 references.) (BT)

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Learning Music Online: An Accessible Learning Program for Isolated Students.

Austin Bond

National Centre for Vocational Education Research, Adelaide (Australia)
Australian National Training Authority, Melbourne

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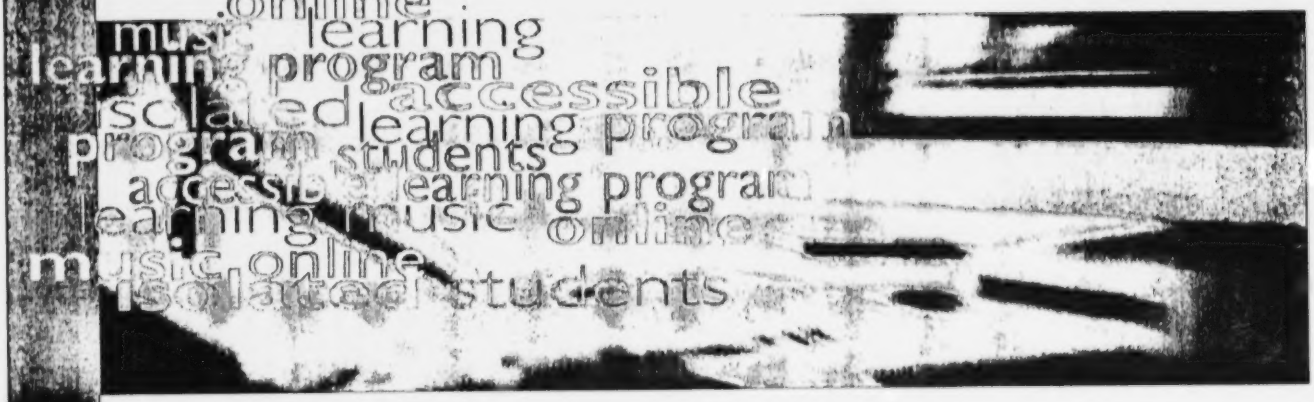

Learning music online

An accessible learning program for isolated students

online LEARNING

Austin Bond

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Executive summary

This project explored the potential of the internet to teach instrumental music online to students in regional or remote regions of Western Australia.

The project was established on the expectation that, at some time in the not-too-distant future, instrumental music tutors located in the metropolitan regions may have in their normal studio practice, a complement of local, face-to-face students alongside a number of regional students learning their instruments online.

For this online development to occur, tutor and student alike must be able to access a learning framework which is effective, simple to use and accessible. Through an action learning program which involved a series of online delivery trials to a small group of students located in various parts of Western Australia, this project attempted to achieve a better understanding of how the learning environment for skills normally physically mediated, can be appropriately 'deconstructed' into various constituent parts, and adapted for internet delivery.

A website was established which provided students with a series of 14 graded lessons in instrumental performance supported by lesson notes on technique and music theory and a body of associated learning resources. Each musical exercise was accompanied by video and audio demonstrations. Students were able to access the lessons in either an ordered or an unordered sequence. Hyperlinks to various related resource materials were provided throughout the program to encourage non-linear access to knowledge, to enhance repetition and to encourage 're-learning' to occur.

The learning model adopted simple and established technology, with ease of access being the primary consideration. The project did not attempt to evaluate the utility and effectiveness of more advanced technologies, as it was felt that this may interfere with the project's primary objectives.

While the study was successful in building an adequate learning environment using skills and technology within reach of the average music tutor, overall the study was not able to conclude that, using the selected learning model, the internet is an effective medium for delivering musical instruction to students isolated by distance. There were difficulties both in finding students who wished to learn through this medium and engaging them in an effective program of learning.

This study has found that, within the learning framework developed for this pilot study, increasing the distance between the tutor and the learner has a negative effect on:

- quality of performance
- level of engagement
- development and refinement of skills and knowledge.

Despite using different approaches to engage the students, the barrier of distance was not adequately overcome in this study. This was attributed in part to the preparedness of the learner to make most effective use of this medium, but also to limitations in the available knowledge regarding the best methods to effectively motivate and engage students in this form of learning.

Suggestions for further exploration of this learning medium arising from the study included:

- developing new learning pedagogies for engaging instrumental music students in the learning process

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- a longer time trial—students may need more time to adjust to the new medium and the tools it uses
- establishing local music networks to provide additional infrastructure and support
- developing strategies to assist students adjust to the discipline required in online learning
- creating study groups to enable students to feel a greater sense of commitment as well as a sense of being part of a team
- building a stronger offline learning structure to compensate for the effect of isolation.

Although this project was not obviously successful in terms of student outcomes, there is still reasonable optimism for this form of learning. The delivery trials have confirmed that relevant online learning materials can be adequately prepared and delivered to students by the average musician, and that this situation will inevitably improve. The establishment of a suitable learning pedagogy that aligns with the needs, expectations and preferred learning styles of students in this area of study is the main barrier to be overcome.

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Introduction

Rationale for the project

The explosive growth of mass communications—the combined power of the computer, the internet, television networks, global satellite systems, cellular telephones, fibre optics and many more devices—has created a new global consciousness and culture, and offers an ideal framework for developing new levels of opportunity for arts training. Until relatively recently, the accessibility of internet technology was restricted to the elite. Nowadays, it is very common for regional Australians to have access to the internet and the technology which will make online learning models feasible for the first time.

This project was therefore established to explore the potential of the internet to teach instrumental music online to students in regional or remote regions of Western Australia. It had the following objectives:

- to research the potential offered by internet technology to make physically mediated curriculum accessible to students in remote locations
- to propose new learning pedagogies which utilise online and flexible delivery models for the delivery of arts curriculum
- to develop curriculum trials as prototypes of various delivery models for students located in regional communities
- to evaluate the merits associated with each delivery model.

The project aimed to provide a better understanding of how the learning situation for physically based programs can be appropriately 'deconstructed' into various constituent parts and re-assembled for delivery in an online environment; that is:

- knowledge which can be easily transferred over the internet
- skills which can be internet-assisted
- performance or practical knowledge which must be delivered face to face.

E-learning in the arts

The internet has had a dramatic impact upon education. Communication technologies are interconnecting people around the world in ways and on a scale that could not have been envisaged a decade ago. Applications for synchronous and asynchronous collaboration between desktop computers have proliferated, transforming the internet of a decade ago from a relatively small computer network used mainly by researchers into a global network used by many hundreds of millions of people (Taylor 2001).

Educational institutions have been quick to make productive use of this new opportunity, integrating internet-based learning, in both on-campus and off-campus delivery modes, into curriculum areas across all educational sectors. Although it may be appropriate at this time to reflect upon the considerable change that has occurred as a consequence of the internet's take-up for educational purposes, it is important to understand that this revolution in educational delivery has not yet reached its climax. New technologies continue to stream on to the web at fantastic

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rates, each bringing with it its own revolution (see Hardin & Ziebarth 1996; Taylor 2001). The rate of change is so significant that some educational providers are introducing what Taylor (2001) describes as fifth-generation distance education initiatives at the same time as other institutions are still coming to terms with fourth-generation programs. He further predicts that the extent of the upheaval and change in both business and education over the past decade will, in retrospect, seem insignificant as new technology is put into effect over the coming decade.

While e-learning is entering this exciting new phase, those of us working in the arts have yet to experience the full force of its impact. There has been a discernible movement towards the use of the internet for accessing learning materials in more academic subjects, but generally training in movement-dependent arts subjects still relies predominantly upon face-to-face teaching methods. Although modes of curriculum delivery are now more effective, more efficient, more student-centred, more flexible and consequently more accessible, arts courses are still delivered to students primarily in the large metropolitan centres and are not generally accessible to students throughout regional Australia.

In particular, the practical implementation of technology in music training has not proceeded as rapidly as might have been predicted. Almost a decade ago, Berz and Bowman (1994) surveyed a range of research initiatives in computer-aided instruction for musicians, including learning instrumental fingerings, improving intonation, the provision of experimental programs for developing conducting skills and interactive multi-media programs to develop interpretation. Technical procedures such as tuning, basic instrumental technique, articulation, ornamentation and special effects were also areas where computer-assisted instruction was applied. Yet a recent survey of some of the major online learning providers in the vocational education and training (VET) sector (WestOne—WA Department of Training and Employment), the higher education sector (The International Distance Learning Course Find, Scottish Knowledge, Global University Alliance, Universitas 21) and the adult education sector (University of California Los Angeles [UCLA] Extension Service), failed to find a single instance of a course which delivers physically based arts training through online instruction (August 2001).

While there is very little accredited training available in instrumental music online, there is evidence of a growing body of interest in this area. For example, articles on the subject are now appearing in distance education magazines (Distance Education Report 2000) and an international conference has been dedicated to the cause (International Conference on Web Delivering of Music, Germany 2002). Although not yet a viable alternative to accredited training programs, a number of community music sites are emerging that promise online learning for musical instruments (for example, http://www.classic-guitar.com/, http://www.wholenote.com). In the field of music education there are isolated examples of online learning and distance education programs (for example, ABC–Musica Viva's Baroque On, University of Southern Queensland) and theatre education (BA in Theatre Studies by external studies at Rose Bruford College, United Kingdom), and there are a variety of options in related creative disciplines such as writing.

There is evidence that video conferencing is becoming increasingly popular as a form of communication and learning in areas such as language studies (*Educational Computing and Technology*, September 1999, pp.36–9), and there have of course been limited attempts to use this technology to teach students in the arts. For example, video-conferencing projects have been pioneered by violinist Pinchas Zukerman[1] and the Sydney Conservatorium of Music and are designed to teach music by remote video. In dance, the Western Australian Academy of Performing Arts is currently working with Taiwanese choreographers linked by satellite video with a group of students rehearsing in Perth, Western Australia. In collaboration with the National Institute for the Arts (Taipei, Taiwan), the Hong Kong Academy for Performing Arts and Purchase College

[1]Mr. Zukerman is Music Director of the Ilona Feher Music Center in Holon, Israel, and chairs the Pinchas Zukerman Performance Program at the Manhattan School of Music. To maintain close relationships with his students while fulfilling the travel demands of his concert engagements, Mr. Zukerman has pioneered the use of distance-learning technology in the arts. Through the use of the school's recently installed videoconferencing system, his students are able to receive regular string instruction (Kirshbaum Demler & Associates, Inc., http://www.skassoc.com/BioZukerman.htm [accessed August 2001])

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Conservatory of Dance (State University of New York), the project involves the recreation, by students from these institutions, of *Legacy*, a full-length work by Taiwanese choreographer Lin Hwai-Min for the World Dance Alliance Global Assembly and International Festival of Dance Academies in Düsseldorf, Germany in 2002. In the process, choreography, dance notation, interactive 'real time' video rehearsal and the translation of choreography across cultures are being examined.

Despite these developments, there is still a significant lack of opportunities for students who wish to acquire practical and/or physical skills in the performing arts. As exciting as these projects are, it is true to say that developments such as these are limited to those who have access to the technology and the funds to cover the cost of set-up and transmission. The process is difficult to operate over an extended (one-to-many) network and is still very much 'location-dependent'; that is, students in remote communities may need to travel many hundreds of kilometres to find an appropriate communications centre.

With the development of internet-based communications technology and its ever-increasing accessibility in many locations around Australia (see McKavanagh et al. 2002), there are good reasons to seriously consider online courses in music. These include:

- Growing numbers of students are familiar with this form of learning.
- The technology is increasingly becoming more reliable and conducive to musical instruction.
- The availability of internet resources such as bulletin boards, newsgroups, chat rooms, streaming video and sound images, digital scores, musical instrument digital interface applications, CD-ROMs, all make for a very interesting collage of learning materials which have only recently become accessible to the average user.

In addition to the above, Waters (1999) suggests that courses taught via the web have some surprising advantages over traditional teaching methods, such as the ability to replay and review resource material as well as the flexibility to structure learning to suit an individual's preferred learning style. However, the most compelling reason to seriously develop this form of learning is to increase access to these learning resources for regional and remote Australians who are otherwise seriously disadvantaged in the range of training opportunities available to them through other distance education provision.

Regional access to the arts

> 2002 Australia's Year of the Outback presents the birth of an ongoing process through which the movement of resources, services and people from Inland Australia can be halted and then reversed. (Western Australia 2002)

There is, and always has been, a substantial gap in the delivery of arts curriculum to regional communities. The Entertainment Industry Training Package was launched in 1999. The Music Industry Training Package was launched in 2001 and at March 2002 there were no qualifications from either package delivered online. To make matters worse, there are many arts programs in regional communities which have been withdrawn due to program rationalisation and financial constraints. Students in remote communities generally face the choice of driving many hundreds of kilometres to visit a larger regional centre, or relocating to a metropolitan area.

But while access to physical resources in these regional communities has been shrinking, access to the internet has been rapidly improving. For example, the Telecentre Network in Western Australia comprises 90 community-owned, managed and incorporated centres, and is claimed to be the largest co-ordinated network of telecentres in the world, the only one which provides a satellite teaching service and the only one with a central support centre (Western Australian Telecentre Network 2002). There is a significant challenge, if not an obligation, for teachers and educational systems associated with the arts training packages to integrate technology into the learning

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curriculum in innovative ways in order to improve the level of access to training in regional and remote areas of Australia.

How might the possibilities offered by the internet be used to support meaningful learning in the arts? Is it feasible to create a learning model which is less dependent upon close physical proximity between the teacher and learner? Globalisation, economies of scale, the breaking down of the distinction between distance education and campus-based education, the expectation of access by students in remote locations—these and other physical and social forces have created a new demand for distance learning. Computer-mediated communication provides new opportunities for dialogue, debate and learning which can be used creatively to reduce the effect of separation by distance. But how could they be used most effectively in arts training? As the emphasis in arts training inevitably shifts from campus-centric, teacher-dominated learning to the more independent learning models which are characteristic of online learning, the roles of the teacher, the student and the learning methodology all require re-appraisal and review.

This study therefore researches the potential offered by internet technology to make physically mediated curriculum available and accessible to students in remote locations. It discusses a suitable learning pedagogy which enables online access to resource materials for the delivery of arts curriculum. A pilot curriculum trial is used to test the model and evaluate the prototype against more traditional forms of learning.

This project is founded on the expectation that, at some time in the near future, students in remote regions may have access to instrumental music tutors (who tend to be clustered in the larger metropolitan centres) via the internet. Along with other tutors who work in arts-related disciplines (such as speech, acting and dance), these teachers may use face-to-face classes for situations where physical access is possible and online classes for situations where separation by distance (or other barrier) creates serious learning disadvantages.

However, for this development to occur, the learning framework must be effective, simple to use and accessible to both the average teacher and the average student alike. All students nowadays use technology to access learning (even metropolitan students attending face-to-face classes), but in most cases it is seamless and transparent to the user. Who has difficulty using a telephone to arrange a meeting, or driving a car to the required location? For online learning to become a reality for remote students, the technology must be equally innocuous. Learning solutions which are based on new or emerging technologies (either in production, transmission or reception) have the potential to create as many barriers for these students as they currently face from distance itself.

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E-learning pedagogy

From instruction to construction

What learning theory is best applied to the delivery of online instrumental music tuition? Is it sufficient to replicate the practice of a traditional music studio online, and use this as a second-best alternative for regional and remote Australians? Or can the richness and the complexity of the interactive multimedia environment be used constructively to create a more effective learning framework?

Online learning, by its very nature, changes the relationship between the tutor and learner. Learning theories which have emerged in support of this mode of delivery emphasise, for example:

- the importance of user control over the form of learning
- the accommodation of different (including independent) learning styles
- nonlinear learning environments
- social learning
- integrated learning scaffolds
- active, networked participants.

Rather than being a deliverer of knowledge and training, the tutor in the online learning environment becomes instead a facilitator of learning. Can these concepts be applied to the learning of instrumental music online? They seem somewhat removed from the studio teaching environments of most music schools where the tutor invariably works with students in an intensive, one-to-one teaching situation. The curriculum is traditionally based on a linear or hierarchical structure designed to progress the student through a defined learning sequence. Access to knowledge is often restricted so that students learn in familiar and controlled sequences.

This learning environment is characteristic of an objectivist pedagogy which assumes that knowledge is constructed in logical ways based on small components, or learning objectives. Its strength of course is its ability to address novice learning and skill development situations (Phillips 1997). However, it also assumes the dominance of the tutor through the learning process, a position unlikely to be sustainable in an online delivery model which, by its very nature, relies on self-motivated, active and engaged learners who can interact with a wide variety of learning materials in an information-rich landscape.

This project therefore aims to provide a better understanding of how the learning situation for physically based programs can be appropriately 'deconstructed' into its constituent parts in order that these parts can then be re-assembled in appropriate ways by the student. These are described below.

Knowledge which can be easily transferred over the internet

The 'knowledge' component of music making is well-defined. There is no shortage of tutor books, syllabus documents and musical exercises. Many of these resources have been written in elaborate detail and are quite accessible to the average student, particularly now with the proliferation of online music stores.

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The acquisition and practice of skills

In this stage of learning, students interact with the knowledge. This process no longer relies directly upon the student's access to the resources. Instead, it relies upon feedback provided by an experienced musician as the students interact with the materials and refine their skills. In an online environment, feedback from an experienced musician can be provided through the internet, using videos, sound files and other communication technologies. However, since it is primarily asynchronous (time-delayed) in nature, less personal and lacking any sense of touch and feel, it is important to recognise that the quality and effectiveness of this feedback may be limited. There is therefore an increasing requirement in this stage for students to develop other sources of feedback (colleagues and friends), to be largely self-motivated and to learn by listening, watching and doing. This is consistent with the 'conversational framework' for good teaching described by McKavanagh et al. (2002, p.19).

In this stage of learning, students should actively strive to construct meaning and become more involved in their learning than is traditionally the case. Technology is a key transforming agent, extending the range of resources available to students, as well as allowing new and dynamic relationships to form between teachers, students and the broader community (Cairncross & Mannion 2001). Greening (1998) suggests that online learning models must take full advantage of the new possibilities offered by technology, arguing that the internet is much more likely to be valuably employed in learning environments that foster more student-centred exploration across a broad spectrum of activities. The strength of interactive multimedia lies in its ability to mix media to suit different learning styles, as well as its use for repetition and practice, thus allowing student control over the learning process and encouraging multiple sensory engagement, multiple representations, portability and modularity of the learning curriculum. The various mediums should be designed to reinforce each other to promote deep learning. Students learn from their own interaction with a range of learning resources, and with other students.

The development of performance/interpretative ability

In all probability this aspect of music performance must still be delivered by the traditional form of face-to-face instruction.

Learning styles

Constructivist theory holds that learners must construct an internal, personal representation of knowledge. The richness and utility of this representation is dependent on the degree to which learners integrate new knowledge into their existing knowledge base. Since personal restructuring is required, knowledge cannot simply be transmitted. Rather, it must be constructed by an intellectually active learner striving to build a meaningful personal representation of experience. The constructivist learning setting is therefore rich and authentic since the context becomes part of the constructed knowledge. Collaborative learning, through which students can share views and strategies and thus develop multiple perspectives, is encouraged in the constructivist environment. These multiple perspectives provide learners with flexibility and support in reorganising their knowledge base and contribute to the toolkit of strategies for organising new experiences (Yarger et al. 1998, p.2116).

Fowler and Mayes (2000) describe learning as an iterative process. Their model describes learning as a process of ongoing refinement of a conceptualisation–construction–identification loop, with dialogue playing a central role in each stage (Fowler & Mayes 2000 cited in Cairncross & Mannion 2001, p.157). Knowledge is first conceptualised, abstracted and then interpreted and considered by learners as they apply this knowledge in meaningful activities. This process is articulated in an earlier study by Laurillard (in Phillips 1997, p.24) who places the iterative sequence of the ideal teaching and learning process in a four-stage model shown in table 1.

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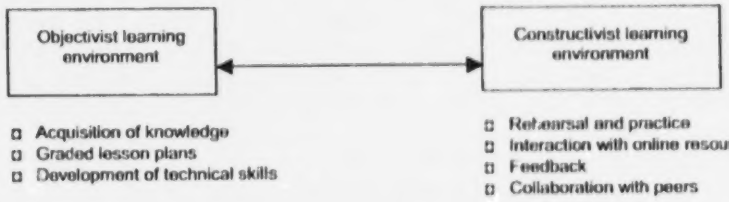
Table 1: Characteristics of the ideal teaching–learning process

Discussion	Between teacher and learner at the level of descriptions
Interaction	Between the learner and some aspect of the world defined by the teacher
Adaptation	Of the world by the teacher and action by the learner
Reflection	On the learner's performance by both teacher and learner

Can this model be applied to online instrumental music tuition? This project is based on the hypothesis that a collaborative learning model can be applied productively to overcome the negative effect of separation between tutor and students when learning instrumental music in an online environment. The ideal piece of courseware for music tuition will therefore draw upon the most appropriate aspects of both objectivist and constructivist theories, and balance these within a composite learning framework (see figure 1). The emphasis of the framework is not on pitting one methodology against another; rather, the objective is not to deprive any student who is unable to make regular contact with a tutor, of an effective instructional medium.

Figure 1: A composite learning framework



Drawing upon this composite framework, table 2 proposes a five-stage learning model that attempts to integrate objectivist learning principles for the acquisition of knowledge—the important pre-requisite ingredient for music performance—with a constructivist framework for adaptation and refinement of performance skills. The model has been applied to a unit of competency from the Music Industry Training Package (CUSMPF01A: Develop basic technical skills for playing or singing music [see appendix 1]).

In this learning model, the relationship between the student and the tutor undergoes a transformation as the student progressively moves from accessing a structured learning resource to interacting in a more open-ended learning environment. In a traditional studio teaching environment, the teacher's constructed world and the student's experiential world are largely congruent. However, in an online learning environment, the student's experiential world is unlikely to be influenced to the same extent by the tutor since the student engages in the learning program according to his/her own learning style and personal interests. In this open learning environment, the student's conceptual knowledge interacts more prominently with his/her experiential world. Learning takes place through a broad cross-section of activities, involving both the tutor and the student's community. The result of the learning iteration provides a framework for interaction and discussion with the tutor, who although still a valuable resource to the student, is less dominant in both the resource scaffolding and the structure of the learning activities (see figure 2).

This model assumes that students learn by interacting with a variety of musical resources (by watching, listening, doing) and responding to feedback from a broad cross-section of people (tutor, peers, colleagues and friends). McKavanagh et al. (2002, p.6) report that '… good practice in web-based learning settings will be driven by teachers and/or designers paying attention to effective use of "conversations"'.

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Table 2: A five-stage learning model for online instrumental music tuition

	Stages of learning	Mode of delivery	Example	Competencies (see appendix 1)
Discussion	Acquisition of knowledge	Internet learning resources	Web pages Study guides Musical instrument digital interface files Music scores Sound files Video clips Online tutors CD-ROM	**Identify the range and capability of the instrument** 1.1 Identify the physical characteristics and parts of the instrument or voice and how they are produced in performance 1.2 Identify how the sound is produced in the selected musical style **Maintain and care for the instrument** 2.1 Use appropriate methods to care for, move and store the instrument 2.2 Set up and/or warm up the instrument or voice as required 2.3 Identify any required accessories and adjust the settings of the instrument and accessories where relevant
Interaction	Rehearsal and practice	Self-paced learning	Interaction with the above sources of knowledge; modelled behaviour (demonstration videos and sound files); repeated practice	**Prepare to produce basic notes, rhythms and/or chords** 3.1 Identify how the physical relationship between the instrument and the performer produces the required sound 3.2 Plan activities to produce a range of notes, rhythms and/or chords
Adaptation	Feedback	Internet-assisted	Video-tape supplied by student; email communication with tutor (discussion/tutorial); personalised feedback via internet sound, text and vision; audio and video conferencing (if appropriate); master classes; online audio and video tutorials	**Prepare to produce basic notes, rhythms and/or chords** (ctd) 3.3 With assistance, develop listening skills to enable recognition of simple musical elements, and apply these skills to the production of a range of notes, rhythms and/or chords 3.4 Develop a practice plan to develop technical skills 3.5 Use correct posture to extend technique and to develop healthy performance habits in line with OHS principles
Reflection	Refinement	Self-paced learning; collaborative learning	Discussion groups (peers); two-way interactive video with tutor (if appropriate); collaborative (group) discussion of projects	**Identify the musical elements of the selected style** 4.1 Identify and play or sing simple melodies, chords or rhythm patterns that are characteristic of selected repertoire 4.2 Identify the elements of pitch, rhythm, sound colour and/or volume and how they are used in the selected repertoire
	Performance and review (including assessment)	Face-to-face	Six-weekly group master class and residential schools	**Identify the musical elements of the selected style** (ctd) 4.3 With assistance, use techniques to develop proficiency in producing the required sound 4.4 With assistance, evaluate technical development against planned performance outcomes

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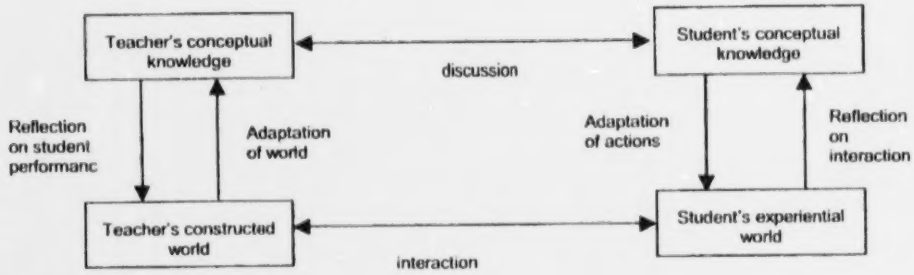
Figure 2: Essential aspects of the teaching–learning process



Source: Phillips (1997, p.23)

Independent learning is not a new concept in music. (There are many good musicians who claim to be self-taught.) In any music shop, it is easy to find a large quantity of 'teach yourself' tutor books. However, these books deal with knowledge, and provide no feedback on performance. The fact that many of these tutor books are used as resource materials for students in conjunction with face-to-face lessons reinforces the need for a learning model which integrates the acquisition of knowledge with the less tangible aspects of music-making—the chemistry between the performer's emotional experience of the world and the shape and quality of the sound produced. This aspect of music performance is of course more difficult to influence over the internet. How then does one provide an effective substitute? As there is less that can be relied upon in the tenuous relationship between tutor and student in the online learning environment, how does one structure meaning into the student's interaction with mentors, peers and friends (the student's experiential world)? Two positive contributions are video feedback and regular master class/workshops. However, the heart of the music lesson is interactivity; that is, the model proposed relies upon limited interaction through face-to-face contact, but instead displaces this to asynchronous feedback and substitutions such as collaborative learning situations with peers (for example, playing pieces to each other, talking to each other about learning a particular piece).

This project will therefore attempt to explore the potential contribution of students working in collaborative groups for the delivery of isolated and remote instrumental music tuition. Kaplan and Stauffer (1994) cite evidence in support of co-operative learning models, evidence which includes outcomes related to positive attitude and increases in achievement, cognitive development and self-esteem. McCann and Radford (1993, pp.30–43) propose a three-phase framework to enhance learning outcomes in collaborative learning situations (see figure 3). The phases are:

Phase 1: individual reflection (thinking carefully and systematically about what we are doing and why)

Phase 2: sharing practice (peers coming together to share experiences and learning)

Phase 3: collaborating to enhance practice (sharpening the focus).

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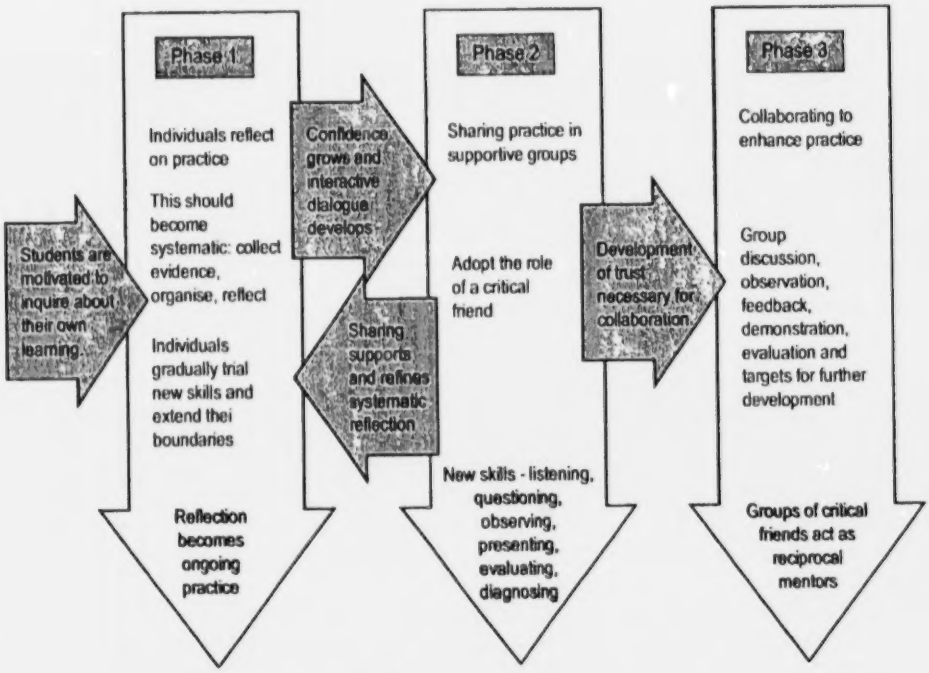
Figure 3: A collaborative framework for teaching and learning


Phase 1
Phase 2
Phase 3
Students are motivated to inquire about their own learning
Individuals reflect on practice
This should become systematic: collect evidence, organise, reflect
Individuals gradually trial new skills and extend thei boundaries
Reflection becomes ongoing practice
Confidence grows and interactive dialogue develops
Sharing supports and refines systematic reflection
Sharing practice in supportive groups
Adopt the role of a critical friend
New skills - listening, questioning, observing, presenting, evaluating, diagnosing
Development of trust necessary for collaboration
Collaborating to enhance practice
Group discussion, observation, feedback, demonstration, evaluation and targets for further development
Groups of critical friends act as reciprocal mentors

Source: Adapted from McCann and Radford (1993, p.20)

Communities of learning

> An immense opportunity exists for institutions to establish new forms of electronic-based collaboration—from the student level to the institutional level—that can bring about major improvements in both access and learning … There is also an opportunity for new levels of multi-institutional, multi-state, and multi-national collaboration to provide post-secondary education and training through existing and emerging global networks.
>
> (Twigg & Oblinger 1996, p.1)

Yarger et al. (1998) argue that advancements in our understanding of human learning, shifts in societal requirements, and demands for increased economy in education have created considerable pressure for large changes in educational practice. These changes have begun with a major shift in instructional philosophy. The construct of a 'learning community'—learning that is situated in the authentic disciplines around which the community operates—is one such theory that has increasing prominence both as a means for understanding human performance and learning outcomes, and as a vision for guiding educational reform. The term has been used to describe a wide range of contexts, from communities of practice, to virtual community networks and learning communities. The new learning paradigm attempts to move the learning framework from situations which are:

- passive to active
- real to virtual
- static to dynamic
- unidirectional to interactive

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- isolated to supportive
- single-media to multi-media
- fixed to flexible
- synchronous to asynchronous.

However, Schwier (1999) maintains that emerging approaches to developing rich learning environments which combine technology and a host of interactive strategies usually stop short of the kind of engagement that will allow learning communities to form. In learning communities, students become more actively involved; they spend more time learning together; they form social groups outside their classrooms; and they develop a deeper appreciation of the value of co-operative learning. Tinto (1997) proposes that, in order to adopt modes of organisation in curriculum which encourage shared learning and community, we should:

- organise curriculum into learning communities to enable student learning to span disciplines
- re-organise our teaching strategies to promote collaborative learning experiences
- employ forms of assessment that encourage students to engage in a shared discourse about their learning.

A learning community normally depends upon the participation of relatively autonomous individuals who are mutually engaged in the learning process. Autonomy and inter-dependence present difficult challenges for educators who want to build and maintain a learning community. The problem is to create a system in which people can enter into relations that are determined by shared ambition, rather than by rules or structure. Although learning is mediated by the computer, the process itself is composed of, and driven by, human interaction. Group work must therefore adequately support the formation of productive personal relationships. The primary focus in this stage of the process is therefore on the sociological aspects of learning—the tools and methods which support personal contact in the learning environment.

During the course of this short pilot project, it is unlikely that any meaningful sense of belonging to a community of learners could be achieved. However, the underlying principles discussed above should still guide the project's development as students move from the early stages of reflecting upon individual outcomes to sharing their experiences with others in order to enhance their performance.

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Online delivery trials

Scope of the study

The objective of this project was to deliver online instruction in instrumental music to classical guitar students, using a learning model that would be accessible to the average musician and student alike.

The project was designed to address the following questions through action learning:

- What is the potential of the internet for teaching instrumental music in remote locations?
- How is the nature of the provider–student relationship altered in this form of learning (see Mitchell 1999)?
- How is quality of teaching assured in these situations?
- In online learning models for physically mediated curriculum, what are the gaps between institutional delivery and online delivery which need to be addressed? What is the correct mix of synchronous, asynchronous and face-to-face communication?
- Which online tools are most successful for these distance learners?

Method

The project required a body of students who were interested in learning a musical instrument through the internet. As the preferred learning model for the project involved an element of face-to-face contact with students, it was decided to limit the amount of travel involved by attempting to recruit students from one geographical region. The following strategies were used to attract a group of students for participation in the project.

- Advertisements were placed in newspapers in Northam, York, Merredin, Kellerberrin, Katanning and Albany. The advertisements ran for two weeks, on two separate occasions.
- In addition, flyers were sent to the Shire Offices, libraries and Westlink centres in these areas.
- Personal approaches were made to music tutors in Kalgoorlie, Leonora, Port Hedland and Esperance.
- A meeting was held with the principals from the School of Isolated and Distance Education and advertisements were placed in the School of the Air newsletters.

While the response was disappointing, a group of 12 students became involved with the program. These students were organised into three groups—one local group and two groups of regional students.

Local group: in order to provide a benchmark to assess the rate of progress made by students in the regional group, a small group of four students in the metropolitan area (all school-age) acted as the 'control' group. These students accessed the same learning materials as the other groups, but were able to make contact with the tutor as the need arose, or at other times as organised by the tutor. They worked independently through the study lessons; they accessed the lesson materials through either the internet or CD-ROM; they worked at their own pace and were otherwise provided with a level of support which was comparable to the regional students.

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Regional students: these students were located in regional areas of Western Australia who accessed the learning materials online or through a CD-ROM, and who had limited contact with the tutor. Six students were located in the Merredin area (including one student from Kellerberrin), one in Northam and one in Port Hedland. Three students were school age and the remainder were middle-aged, working adults who were studying part time.

As the regional students commenced the project at different times, they were divided into two groups:

- **Group 1:** this group commenced first. Their learning program was modelled on a constructivist methodology. They were asked to form learning groups for both interaction and feedback, and to work together by:
  - playing for each other
  - talking to each other about the exercises
  - sharing information
  - listening critically to each other's playing
  - providing encouragement and support.

The tutor was some distance from the learning framework, providing support and advice but otherwise relying on the group to function independently. Students were encouraged to approach the learning materials on a holistic basis. It was envisaged that, if the project was successful, these students would gradually form a bond and function in some respects like an online learning community, collaborating with each other as well as with the metropolitan students. There was the potential for these students to participate in existing newsgroups (which discuss a variety of issues such as new pieces to study, technique, buying instruments, websites to visit and so on), as well as to work cohesively together submitting their pieces on the internet for others to hear and providing encouragement and support. Video checkpoints were built into the learning program every two lessons. Moreover, students had the opportunity to make irregular contact with the tutor through either the telephone, email or fax.

- **Group 2:** this group commenced later, with three students. Their learning program was modelled on an objectivist methodology which more closely resembled the traditional studio teaching environment. Students were given set work and were asked to progress through the study materials in a more defined sequence. They worked as individuals, were not asked to form peer groups and were more carefully organised and monitored by the tutor.

The learning model

The learning model comprised three integrated components:

- the internet was used for communicating and transmitting knowledge-based resources to students (all students)
- videos and CD-ROMs were used for the purpose of providing feedback to students and for influencing the nature of their activities and interactions with others as skills were practised and refined (regional students only)
- face-to-face workshops were used for the discussion of technique and performance skills (all students).

A website was established which provided students with a series of 14 graded lessons supported by lesson notes, notes on technique, music theory and a body of associated learning resources. Each musical exercise had video and audio demonstrations. Musical instrument digital interface sound files were provided as the most efficient form of audio file to download. (These files are very small in size and are quick and easy to play.) Audio and video files were also available for students to download but, as the size of the exercises increased, so did the size of the files. Due to the lengthy download times, video was only realistically accessible through either the CD-ROM or a high-speed network connection.

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Where possible, the learning model utilised simple and established technology, with ease of access being the primary consideration (see appendix 3). The project did not attempt to evaluate the utility and effectiveness of more advanced technologies, as it was felt that this may interfere with the project's primary objectives. That is to say, it was not expected at this stage of the internet's integration into Australian society that students will have a large variety of tools at their disposal, nor unlimited bandwidth for downloading resource materials. Where students had difficulty accessing the internet (for example, limited access to local-call internet service providers), they were encouraged to access the resource materials directly from a CD-ROM. The structure of the lessons was consistent throughout the program, so that once access to the first lesson had been successfully accomplished, the method and approach would be transferred to all subsequent lessons.

Acquisition of knowledge in the early stages

The objectives of this stage of the learning program were as follows:

- to establish contact with the students
- to begin to develop trust
- to help students become familiar with the learning environment
- to resolve any technical issues or other learning barriers
- to discuss the program's format
- to introduce students to basic technique and an understanding of the instrument
- to learn to read music and follow musical instructions
- to progress through a graded series of exercises.

Learning materials for the program were made available to students initially through the internet. These materials were organised in a structured, linear sequence designed to progress students through a graded series of exercises in order to establish a reliable and secure technique in support of their musical knowledge. It was expected that students would generally follow the structure provided. However, there were no barriers within the system which restricted students moving from one lesson to another, and there were no criteria which required students to access all the information that was available.

Hyperlinks to various related resource materials were provided throughout the program to encourage non-linear access to knowledge, to enhance repetition and to encourage 're-learning' to occur.

An essential ingredient to learning an instrument is the development of a positive relationship between the tutor and the student. Students need to feel confident about accepting the knowledge and advice provided. In particular, modelled behaviour depends upon the willingness of the student to emulate the tutor. It was therefore considered advisable where possible, to meet with students at an early stage to establish a positive and effective learning relationship which could then be developed and sustained over the internet.

Rehearsal, practice and feedback

The objectives of this stage were

- to progress through the learning materials and assimilate the knowledge into a personal performance skill
- to establish a supportive peer network (regional group 1)
- to work collaboratively in an authentic context with others to develop playing ability and performance skills (regional group 1)

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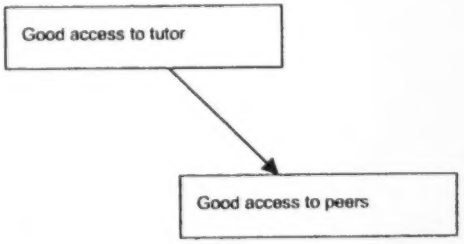
- to establish a strong working relationship with the tutor (regional group 2)
- to progress through a defined learning sequence (regional group 2)
- to focus on personal achievement
- to develop technical and musical skills.

Starting new students on a musical instrument is always a difficult task. There is much to learn and many barriers to overcome. The tutor needs to understand where the student is coming from; that is, he/she needs to understand the student's conceptual world in order to influence it positively and at an appropriate speed. In particular, establishing a secure and reliable technique in the early stages of learning is very important. Bad habits can linger for a long time if unchecked. Without regular feedback, it is difficult to have confidence that the student's technique will develop correctly. The learning model therefore encouraged face-to-face meetings in the first instance, and furthermore, made opportunities for regular face-to-face sessions during the course of the lessons at six-weekly intervals in order to pick up difficulties and resolve them quickly. As time progressed, it was expected that the requirement for face-to-face sessions would become less frequent.

Given that it was inevitable that remote students would have limited access to a tutor, the project adopted selected use of the following strategies to reduce the communication gap for students, strategies which facilitated access to both the tutor and the student's peer group:

- email
- videos/CDs through the post
- online audio and video files
- staggered workshops
- forming peer groups/critical friends
- mentoring
- online discussion and chat



> Instructional designers of web-based programs need to take advantage of the capabilities offered by technology in ensuring that content materials encourage rich 'conversational' interactions and that student self-directedness and reflection are encouraged.
>
> (McKavanagh et al. 2002, p.8)

The learning framework for the first group of the regional students encouraged them to exercise more independence over their learning activities and to build a network of peers who could provide more collaborative support than would traditionally be the case. Teaching tools initially encouraged personal interaction to develop through face-to-face workshops, followed where appropriate by online delivery of performers' forums, listening to colleagues, special interest topics and music analysis; that is to say, the project attempted to build a resource-rich learning environment for students by including items such as:

- guitar/music history
- musicians talking about pieces
- music library of musicians playing similar pieces.

Depending upon the extent to which it was required, music was played at reduced speeds so that students could more easily study hand positions and technique. While this project was not able to develop the concept of a resource-rich learning scaffold to its fullest extent, other resources which could be accessed by students in support of the learning program would be drawn from the list provided by Collins (no date) who suggests that an appropriate learning scaffold for a virtual learning community could include any number of the following:

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- mentoring, such as advising and guiding students
- project-based instruction, either within the classroom or in projects involving the community
- guest lecturing which promotes interaction between students and persons from the larger community
- didactic teaching—supplying course content, posting assignments and other information
- retrieval of information from other online information sources
- interactive chat, to brainstorm with teachers and peers and to maintain social relationships
- personal networking and professional growth, and such activities as finding persons with similar interests on scholarly discussion lists
- facilitating collaboration
- individual and group presentations
- peer review of performance, peer counselling
- practice and experience using emerging technologies
- computer-based instruction, such as tutorials, simulations and drills.

Refinement of performance and review

The objectives of this stage were to:

- develop a strong and secure musical technique
- understand the aesthetics of musical interpretation
- develop critical and active listening skills.

Performance and review involves feedback and individual reflection on performance outcomes (playing the piece correctly, with good technique). As students progress through their lessons, it is necessary to discuss the musical interpretation of the piece and its presentation to an audience. A great deal of modelling of behaviour can occur in this stage as students listen carefully to their own play and that of others. There is also emphasis on developing listening skills and on the ability to critically analyse what other musicians are doing, how they are doing it and how well they are doing it.

Results

Overall, this study was not able to conclude that the internet is an effective medium for the delivery of musical instruction to students isolated by distance. There were difficulties both in finding students who wished to learn through this medium and engaging them in an effective program of learning. Despite adopting different learning methodologies, there appeared to be no critical difference in the outcome for students in the two regional learning groups, and both groups performed less effectively than the local group.

Assembling knowledge for remote access

By far the simplest and most effective part of the project was establishing with some certainty that a wide variety of learning materials can be assembled for the online learner by music tutors with limited access to high-end materials and resources. These materials provide a rich tapestry of opportunities to suit learning styles and individual differences which far exceed anything which has previously been available in print-based media. The technology to deliver online instruction in music is accessible to tutors and students alike, allowing the creation of a learning environment which brings together the skills and techniques of tutors predominately clustered in the

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metropolitan area with students in regional communities. While there is obviously much to be learned about the most effective way of preparing and presenting these materials to students, they were adequate for the local group who proceeded through the lessons at a reasonable pace. Although somewhat cumbersome for the tutor in its present form, with the rapid development of software and techniques for web publishing, this facility will inevitably become simpler and more accessible to the user.

The acquisition and practice of skills

Although the technology was readily available to establish a suitable learning environment for the online delivery of musical instruction, the evidence from this project is that there is not a large body of students in regional areas of Western Australia who are currently prepared to learn in this way. Despite a strenuous effort to advertise the project in a variety of ways and at different times, the response was disappointing. Those that did start the program were, in a number of instances, easily deterred. This was due to a number of factors.

- There are still technical barriers to overcome when learning an instrument through the internet. The technology is not seamless, and is invariably different for each student, making generalisations and technical instruction over the internet very difficult to accomplish. Most students preferred to access the learning materials through a CD-ROM, making the opportunity for internet-based communication very difficult.
- Because the population of people who want to access classes over the internet is small in number and distributed over a very large region, there is no strong support infrastructure in place. A preliminary assessment is that, in the regional communities, it may still take some time before an appropriate communications network is established which overcomes the inherent disadvantages of learning in this way. Many new initiatives are helping to break down the barriers, but at this time, the population this course is aimed does not possess the latest technology—their equipment and software is often several years old. The cost of purchasing and setting up this equipment and establishing an internet connection is often a major factor in their decision-making.
- Most significant however, was the difficulty experienced in getting students to work actively and effectively in this environment. The students generally were not used to working in this way, and were not able to sustain interest or make most effective use of the opportunity available. For some students, maintaining regular email communication and preparing material for a video-camera proved to be difficult hurdles to overcome.
- Students had difficulty in responding to the more open learning environment of the internet. The pressure of work and other commitments and obligations frequently interfered with their program. In some cases, this was unavoidable. In other cases this was used as a convenient excuse for poor performance.

The development of performance skills

This study has found that, within the learning framework developed for this pilot study, increasing the distance between the tutor and the learner has a negative effect on:

- the quality of performance
- the level of engagement of students in their learning activities
- the development and refinement of skills and knowledge.

Assessment and feedback on performance

Making judgements regarding the adequacy of student progress is a complex task for the music tutor, given that students enter the program with different levels of prior knowledge and ability. They commit themselves to different practice regimes and generally progress through the course of

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study at different rates. Assessment therefore needs to extend over a period of time, on multiple occasions, involving a combination of direct, indirect and supplementary forms of evidence. In this case, the tutor is required to assess:

- musical knowledge, which may include the physical characteristics and parts of the instrument, musical notation, conventions for notating left and right-hand fingering, posture and technique
- the use of appropriate left-hand and right-hand technique for playing and sound production (including quality of sound and tone colour)
- the ability to play simple melodies, rhythms and musical forms
- the capability of the instrumentalist to apply skills acquired to a range of musical exercises, activities and outcomes
- the extent to which available printed, audio and video tutoring resources have been utilised and applied
- the intent and approach of the student to the instrument, evident through the organisation and planning of independent study and practice routines and the setting/achievement of realistic goals.

Assessment of these practical outcomes in an online learning environment where the tutor has limited contact with students becomes problematic. In a face-to-face lesson, the tutor is able to assess the situation weekly and, by applying both summative and formative feedback techniques, provide feedback and supplementary learning materials to ensure that during the lesson, students have correctly understood the points in question. In the online environment, the tutor's access to the student and his/her ability to demonstrate performance outcomes is more restricted. The tutor's 'field of vision' is limited to evidence which is collected through:

- observation of video/audio materials submitted
- lesson notes, conversation and feedback from individual students.

In the online environment, this field of vision is largely controlled by the students themselves, who choose how and when to respond to the tutor's communication and feedback. This often results in lengthy delays which have a detrimental effect on the pace and quality of the learning program. During the early stages of learning a musical instrument there is a large body of knowledge to be acquired. If this material is not assimilated, practised and effectively rehearsed, it is difficult to move on to the next lesson. A delay in the process can mean that skills and knowledge are quickly forgotten. The music lessons themselves proved to be not sufficiently satisfying on their own to sustain a high level of interest. Despite using different approaches to engaging the students, the barrier of distance was not adequately overcome in this study. Students in the regional groups were not able to establish a regular practice regime or maintain regular contact with the tutor. While the local group maintained a continuing and effective working relationship with the tutor and progressed through the lessons at a reasonable pace, both regional groups failed to make adequate progress through the study materials and were otherwise unable to demonstrate a satisfactory level of achievement. The first group of regional students did not establish a peer support network from their colleagues and did not develop and sustain an active level of engagement with their instrument. The second group of regional students maintained closer contact with the tutor, but up to the point of writing, had not progressed at the same rate as the local group.

What then is the potential of the internet for teaching instrumental music in remote locations?

Although this project was not been immediately successful in terms of student outcomes, there is still reasonable optimism for this form of learning. The delivery trials have confirmed that the learning materials can be adequately prepared and delivered to students, and that this situation will inevitably improve. The main difficulty relates to the establishment of a suitable learning pedagogy which aligns with students' needs, expectations and preferred learning styles. Brennan, McFadden

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and Law (2001, p.24) note that '… there is a shortage of literature that addresses the specific issue of a coherent web pedagogy'. There is much to be learned about the nature and preferred learning styles of these students, their degree of independence as learners and their willingness to become actively involved in these learning environments. Misko (2000, p.29) discusses evidence which relates to the difficulty students experience in disciplining themselves to get the work done, which is corroborated by this study: many students found that work and other commitments militated against the effective engagement with the tutor in the learning program.

How is the nature of the provider–student relationship altered in this form of learning?

This study has found that the nature of the provider–student relationship dramatically alters in this form of learning. Whether it is because students are not sufficiently prepared to work independently, or because there is something inherently more satisfying in a face-to-face engagement, the inability of the tutor to sufficiently influence the student's behaviour in the online environment is a significant factor in the outcome of the program. The degree of interaction between the tutor's constructed world and the student's experiential world was insufficient to sustain a level of interest and to ensure adequate progress through the learning program. The major difficulty lay in the tutor being forced into a 'responsive' mode by virtue of the asynchronous nature of the feedback loop, as opposed to being the dominant factor in the construction of the teaching and learning situation. The feedback loop, so essential for learning a musical instrument, is therefore critically delayed to the point that effective progress and learning is not achieved.

How is quality of teaching assured in the online music studio?

This is a complex issue even for the traditional studio teacher, and one that has not been adequately answered through this study. Students learn a musical instrument over many years. In order to gain entry into a tertiary music program, students could be expected to have been learning their instrument for between four to six years. The rate of progress for these students can be quite different, and teachers have better results with some students than with others. It may take several more years of study before any conclusion can be drawn regarding the student's potential to make a satisfactory career from performing. Rate of progress can be assessed through video reviews or through face-to-face contact with students using traditional methods of assessment. The more complex part of the question however, is how quality can be *assured* in online learning situations given the added dimension of different students' reactions to this learning environment. This can only be meaningfully discussed in the light of experience, as more online projects are attempted and different learning frameworks are implemented, tested, modified and positively implemented by students. It is difficult therefore to draw any long-term conclusions from this study on the basis of the relatively short amount of time devoted to the online delivery trial.

What are the gaps which need to be addressed?

There are obviously some significant gaps which need to be addressed in the online learning model for physically mediated curriculum. For many reasons, this study has failed to find an adequate substitute for the presence of a good teacher—as a motivational influence, as a point of reference, as an authority figure—and through these delivery trials, there appears to be much that is lost when this presence is removed. It would be reasonable to conclude therefore that more successful distance learning models will include a higher component of synchronous and face-to-face communication. The online learning tools which were most successful for this study were the more familiar tools such as email, telephone and fax. Students had difficulty in responding to the attempt to build a collaborative learning framework, preferring instead to work independently through their learning materials. This does not necessarily discredit the learning framework: it may simply mean that students at this time are not sufficiently prepared to adopt new ways of learning which run contrary to their previous experience.

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Limitations

Access to a sufficiently wide variety of students is the most significant limitation of this study. The students associated with this project by and large had not accessed this form of learning before and were not able to take advantage of support provided through existing links such as a regional training provider. The program could have been more successful had they done this. Students generally had access to low-end technology using the internet through a modem link to an internet service provider. As a consequence, the approach adopted by these students has been to work offline, restricting potential access to many online learning tools and resources.

A more subtle limitation is the tutor's knowledge and ability to create and produce effective, online resources and to use these new learning mediums appropriately. Every studio tutor develops a unique learning framework which they find works with students. Different techniques are used with different students depending upon the requirements of the situation. A great deal of trial and error is associated with this complex interaction between tutor and learner, where high-quality outcomes tend to be associated more commonly with the older, more experienced tutor. Many tutors initially teach how they themselves were taught. In the online environment, one must revise teaching strategies and find new ways of motivating and inspiring students to achieve success.

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Conclusion

Although there is obviously much enthusiasm about the potential benefits of online learning to regional and remote Australians, the results of this project indicate that it may be some time before these benefits will be realised.

It is quite clear that learning solutions now exist for students who are unable to access face-to-face lessons, but it is quite possible that these students are not yet ready to embrace the challenges associated with trying something new, opting instead for other, more traditional solutions.

The main advantages of online delivery for students are convenience and flexibility (Misko 2000, p.15). However, it is precisely these factors that militate against the active engagement by students in these programs. This study has found that many students place work (and social) commitments ahead of their study program, resulting in many delays in communication between tutor and student. The effectiveness of this learning method depends therefore on the willingness and ability of students to study in this way.

Undoubtedly there are additional outcomes against which this project could be measured and which would draw a more favourable response (such as measures of general interest and personal enrichment), but as an exercise in teaching music online, a range of issues must be confronted before a satisfactory result can be achieved.

- *The preparedness of the learner to learn through this medium:* there appear to be two primary difficulties—the unwillingness of the learner to consider learning in this way, and for those that do respond, an inability to make the most effective use of the learning materials. Do learners need more time to become comfortable with this medium?
- *A lack of knowledge by the tutor on how to create an effective learning environment:* students need to be prepared for this form of learning, and to be actively engaged in the learning process.
- *Logistical problems associated with this medium:* difficulties were experienced in meeting up with students and organising face-to-face workshops over a large regional area of Western Australia.

Strategies to ensure more successful outcomes for a project similar to this include:

- Develop new approaches to engaging instrumental music students in the learning process. More physical support can be provided through a local mentor model, or by accessing students through a local training provider where this is possible. More face-to-face activities should be included and a stronger, group learning environment should be created.
- Conduct a longer time trial since this form of learning may simply take longer to 'catch on'. Students may need more time to adjust to the new medium and the tools it uses.
- Keep the technology simple, wherever possible, and avoid the problems caused by students upgrading software and handling different media files.
- Join students to local music networks for additional support.
- Develop strategies to create the formation of a stronger bond between tutor and student.
- Provide more structure into the learning framework which includes a mixture of pre-arranged online and offline contact.
- Develop strategies to assist students to adjust to the discipline required in online learning.

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- Create defined student groups so that students feel a greater sense of commitment, and feel part of a team. Although this is often difficult due to the sparse nature of the population, it may be possible to start students off in groups and require more interaction/joint assessment between peers.
- Build in a stronger offline structure.
- Ensure that the right students are selected, those who can benefit from this type of learning. If this is not possible, provide supplementary learning programs (for example, time management, how to work independently, how to identify and overcome barriers and obstacles and so on).
- For tutors, be prepared to continue to evaluate the learning process to ensure that students are responding correctly.

It is important therefore to understand more fully:

- the relationship between tutor and learner
- the influence this has on learning
- what it is about a teacher in a face-to-face situation which is most effective as a motivator for learning.

Once these factors are clearly understood, it may be possible to find ways of creating circumstances which behave similarly in the online environment. When learning music online, Waters (1999) provides the following recommendations:

- Create a clear structure (firm, yet flexible enough to accommodate inevitable change).
- Maintain a clear focus.
- Keep things simple.
- Consider musical instrument digital interface as a viable format for audio delivery.
- Consider the level of computer literacy of the intended student.
- Be patient—instructors should not expect students to flock to a web-based course during the first few semesters when it is offered. It takes time to establish a reputation for delivery in this area and students do not make a commitment to learning music overnight.

The results from this project confirm these observations. Furthermore, it is suggested that further trials adopt a similar methodology. If success is not immediately apparent, the learning principles around which the project is structured will contribute to a more diverse range of tools for the online music instructor as this medium of delivery becomes more accessible for students who have difficulty learning by traditional methods.

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Appendix 1

CUSMPF01A Develop basic technical skills for playing or singing music[2]

This unit describes the technical competencies required to begin to practise as a performing musician. It covers developing, skills in tuning, elementary sound production and instrument care and maintenance. This is the first unit dealing with developing technical skills in performance.

Element	Performance criteria
1 Identify the range and capability of the instrument	1.1 Identify the physical characteristics and parts of the instrument or voice and how they are produced in performance
	1.2 Identify the range of the instrument or voice and its sound characteristics in line with the selected musical style
	1.3 Identify how the sound is produced in the selected musical style
2 Maintain and care for the instrument	2.1 Use appropriate methods to care for, move and store the instrument
	2.2 Set up and/or warm up the instrument or voice as required
	2.3 Identify any required accessories and adjust the settings of the instrument and accessories where relevant
	2.4 Where required, seek assistance to tune the instrument to the required pitch
3 Prepare to produce basic notes, rhythms and/or chords	3.1 Identify how the physical relationship between the instrument and the performer produces the required sound
	3.2 Plan activities to produce a range of notes, rhythms and/or chords
	3.3 With assistance, develop listening skills to enable recognition of simple musical elements, and apply these skills to the production of a range of notes, rhythms and/or chords
	3.4 Develop a practice plan to develop technical skills
	3.5 Use correct posture to extend technique and to develop healthy performance habits in line with OHS principles

[2]Source: Australian National Training Authority 2001, *CUS01 Music Industry Training Package*, CREATE Australia, Sydney.

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4 Identify the musical elements of the selected style	4.1 Identify and play or sing simple melodies, chords or rhythm patterns that are characteristic of selected repertoire
	4.2 Identify the elements of pitch, rhythm, sound colour and/or volume and how they are used in the selected repertoire
	4.3 With assistance, use techniques to develop proficiency in producing the required sound
	4.4 With assistance, evaluate technical development against planned performance outcomes

Range of variables

Variable	*Scope*
Instruments may include:	■ acoustic or electronic ■ voice ■ stringed instruments ■ keyboards ■ wind instruments ■ percussion ■ plucked instruments ■ voice
Techniques may include:	■ vocal and instrumental sound production ■ bowing ■ tonguing ■ embouchure ■ plucking ■ beating ■ fingering
Techniques include at least one of:	■ playing or singing notes, short, simple tunes and basic scales ■ playing, tapping or clapping rhythms and rhythm patterns ■ playing chords and simple chord patterns
The range of the instrument may include:	■ tone colour ■ dynamics or volume ■ sound production ■ pitch, register or tessitura ■ specific effects available using a range of attacks ■ other acoustic or electronic effects
The capability of an instrument may include its:	■ application to a range of music making activities and outcomes ■ scope and potential for solo or group performance ■ adaptability ■ size

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Tuning the instrument may include adjusting the:

- pitch
- oral tract, including lip pressure and intensity of breath
- position of the diaphragm and larynx
- sound production
- tone colour
- diameter or other instrumental dimensions such as:
  - length of strings
  - tautness of skins
  - length of tubing or pipes
- instrumental materials
- settings of the instrument and relevant accessories

Tuning may involve the use of:

- tuning keys or other tuning implements
- pitch pipes
- tuning forks
- other musicians
- electronic tuners
- electronic pitch or frequency controls

Tone colour may involve:

- physical elements of the instrument
- instrumental attack
- a range of accessories
- interaction between the player and the instrument
- performer's physique
- voice production

OHS principles may include:

- hearing and volume levels for self and others
- safe posture
- electricity hazards
- carrying loads
- relevant practice or legislation
- policies relevant to particular performance contexts

Accessories may include:

- reeds
- strings
- plectrums
- mouth pieces
- mallets or beaters
- stands
- pedals
- microphones
- amplifiers
- samplers
- mixers
- enhancers, such as pitch and tone modulators

Musical elements include:

- simple melodies
- simple rhythms
- simple musical forms

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Evidence guide

Underpinning knowledge and skills	Assessment must include evidence of the following knowledge and skills: ▪ using available and appropriate printed or audio tutoring resources ▪ sound production in selected instrument or voice ▪ performance and instrumental protocols and customs in selected musical style and repertoire ▪ ability to reproduce basic musical patterns ▪ ability to use basic instrumental techniques ▪ ability to discriminate pitch and/or rhythm ▪ planning practice time and setting realistic technical development goals ▪ knowledge of basic repertoire relevant to the selected instrument and musical style
Linkages to other units	This unit has strong linkages to, and may be assessed with, the following units: ▪ CUSMGE11A–Develop music knowledge and listening skills ▪ CUSBGE01A–Develop and update music industry knowledge
Critical aspects of assessment	The following evidence is critical to the judgment of competence in this unit: ▪ basic physical capacity and co-ordination to play or sing simple melodies, chords and/or rhythm patterns
Method and context of assessment	Evidence of competence can be obtained through a variety of methods including: ▪ observation of practical performance of music in candidate's chosen musical style ▪ authenticated details of relevant courses or training sessions ▪ authenticated details of relevant artistic and/or commercial achievements ▪ testimonial from individual tutor ▪ relevant portfolio kit, tapes, scores, CDs, videos, biographies and on candidate's work ▪ portfolios or other documentation will demonstrate the processes used in realising creative concept Competency in this unit may need to be assessed over a period of time, in a range of contexts and on multiple occasions involving a combination of direct, indirect and supplementary forms of evidence. The assessee must nominate the area of specialisation to be assessed. Assessment may occur off the job, on the job or in a combination of on and off the job. Assessment of this unit requires evidence of practical performance demonstrating two simple performing techniques in the nominated area of specialisation.
Resource requirements	This unit of competency must be assessed using: ▪ relevant instrument and equipment ▪ space with suitable physical and acoustic characteristics

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Key competencies	Level
Collecting, organising and analysing information	1
Communicating ideas and information	1
Planning and organising activities	1
Working with others and in teams	1
Solving problems	–
Using mathematical ideas and techniques	–
Using technology	1

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Appendix 2

Project facilitator and industry consultations

The project facilitator was Austin Bond. Austin has experience both as a private instrumental tutor and a peripatetic music teacher with the School of Instrumental Music (Education Department of WA). More recently, Austin was Associate Director (Academic) at the Western Australian Academy of Performing Arts and had responsibility for curriculum. He has performed in Perth as a guitar soloist and was a founding member of the early music consort *Touchwood*, appearing at classical music festivals and on ABC Radio. He has also pursued an active interest in choral music, performing for many years with the vocal group *I Voci*.

In developing the learning environment for the project, Austin was able to discuss concepts and ideas with students and arts practitioners, as well as staff from the following institutions and organisations:

Edith Cowan University
Western Australian Academy of Performing Arts
School of Instrumental Music, Education Department of WA
School of Isolated and Distance Education
Regional music lecturers at Port Hedland and Kalgoorlie
West One, WA Department of Training
Music Department, Central TAFE, Leederville Campus
Representatives from the Music Industry Advisory Group, WA.

Their experience and knowledge contributed to a meaningful discussion of the issues associated with constructing an appropriate online learning environment for the teaching of instrumental music to regional and remote students. The following key points emerged:

- Role and use of technology in the learning environment

  Although there was much enthusiasm for the use of technology as a medium for learning, there was also a high degree of realism about the level of knowledge and technical support required to build and use these systems. While it is wonderful in theory to have students communicating through webcams and participating in online interactive classes, the infrastructure required to set up and support such an operation would be beyond the average studio musician at this time. There was general agreement that the project should instead focus on stable and readily accessible software which would be accessed by all students, and not just a select few.

- Learning style of the target group

  Little is known about the learning styles appropriate for online musicians. However, it was considered important to keep the content as simple as possible and to allow students to access and process information in small but integrated 'chunks'. The site must be functional and informative, with good use of visual cues for accessing learning materials.

- Structure of the information

  There is much that is already known about the structure, form and content of the knowledge which needs to be acquired by students learning instrumental music. There is a large body of material available in print-based media (for example, tutor books, theory books and books on technique) which have the benefit of being tried and tested over many years with students.

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Although this knowledge can be readily adapted for delivery through electronic media, it was stressed that the material should image-based where possible and not depend upon large quantities of text to get the message across. Students generally don't want to spend a lot of time moving through screens and searching for information. The objective is to find the information and to assimilate it as quickly as possible without long internet connection times.

- Quality assurance and assessment

  How easy will it be to ensure that the quality of delivery is maintained in the online environment? Although this may somewhat defeat the objectives of learning instrumental music online, it was considered that backup and support systems such as a limited access to face-to-face classes and workshops wherever possible would be an advantage.

- aesthetic learning and authentic contexts

  The substance of music performance is knowledge put into practice. The delivery of knowledge through the internet is only the first stage in the development of a secure technique that will support musical interpretation. How meaningful is it to discuss these issues over the internet? The project therefore adopted the position that feedback on higher level performance skills would be provided through video in order to achieve a greater degree of interactivity between student and tutor.

- support infrastructure

  It was generally acknowledged that this would be difficult to provide in regional communities where access to other musicians was limited.

- development of a reliable and secure technique

  Will students learn to develop a correct technique, or will they simply learn to play badly?

Whilst there were many other more general concerns regarding the ability to teach music at a distance, there was strong recognition of the need for some initiatives in this area, particularly in support of secondary schools where students in regional areas are finding it increasingly difficult to access music tutors.

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Appendix 3

Online learning materials: Software and technical information

The online learning environment was constructed using the following software and materials:

- *Noteworthy Composer Version 1.70* is a shareware music notation program which was used for creating the music manuscript and musical instrument digital interface files. There are many such notation programs available, and most can be purchased online. They are generally easy to install and use.
- Images created in *Noteworthy Composer Version 1.70* were exported to *Adobe Photoshop Version 5.0*. Graphics Interchange Format (GIF) files were prepared for inclusion in HTML (hypertext markup language) documents.
- A digital camera was used to capture both video and still images. These media files were converted to JPEG (Joint Photographic Experts Group) format (still images) or movie format using *iMovie (Mac OS Version 9.0)*.
- Web pages were assembled using *HomeSite Version 4.5* and exported to the internet using *WS-FTP Pro Version 6.0*.
- *QuickTime Version 5.0* was selected as the preferred medium to view audio and video files as this software was easy to download and more generally accessible by different computers and web browsers.
- *Adobe Acrobat Version 4.0* was used to create PDF (portable document format) files where necessary.

The program was designed to work on both Macintosh and IBM-compatible computers.

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